Draft-Final

Site Investigation and Fill Area Definition Report

Parcels 78(6), 79(6), 80(6), 81(5), 175(5), 230(7), 227(7), 126(7), 229(7), 231(7), 233(7), and 82(7) Fort McClellan, Calhoun County, Alabama

(Volume 4 of 4 - Appendices E through L)

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APPENDIX E

DATA VALIDATION REPORTS

Data Validation Summary Report for the Site Investigation Performed at the Landfill No. 1 (Parcel FA-78) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FA-78. The analytical data consisted of one sample delivery group (SDG), CK978001, which were analyzed by Quanterra Incorporated. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW-846-8270C
Target Analyte List Metals by SW-846-6010B/7470
Organochlorine Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-8141A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151A
Nitroaromatics and Nitramines by SW-846-8330

2.0 Procedure

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation

process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e., SW-846, Code of Federal Regulations, SOP) and technical judgment, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions, is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organic Compounds by SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following demonstrated relative response factors (RRFs) below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK978001	All samples	Bromomethane	B/J/R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met; Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK978001	All samples	Bromomethane, Chloroethane, Acetone	B/J/UJ/R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

Blanks

The 5X rule for contaminants found in the associated equipment rinses, trip, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK978001	All samples	Methylene chloride	Method/ER	B
CK978001	DD0001, DD0002	Naphthalene	Method	B
CK978001	DD0002	2-Butanone	ER	B

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK97800 1	DD0002, DD0027	Acetone	ER	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

Laboratory Control Sample (LCS) was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria with the exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
CK97800 1	DD0001	4-Bromofluorobenzene	UJ/J

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were identified.

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Semivolatile Organic Compounds by SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK978001	DD0003	2,4-Dinitrophenol, Hexachlorocyclopentadiene	UJ
CK978001	DD0001, DD0002, DD0027	Butyl benzyl phthalate, 3,3'-Dichlorobenzidine	UJ

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK978001	DD0001, DD0027	bis(2-Ethylhexyl)phthalate	Method	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria with the exception of IS6, however, all compounds associated with this standard were non-detect.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846-6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK978001	DD0001, DD0003	Thallium	ER	B

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met with the exception of the following for poor percent recoveries and/or high RPDs:

SDG Number	Sample Number	Element/Elements	Validation Qualifier
CK97800 1	All samples	Antimony, Calcium, Chromium, Copper, Lead	UJ/J

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample

All interference check sample (ICS) percent recoveries were acceptable. All QC criteria were met.

Inductively Coupled Plasma Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples.

Field Duplicates

Original and FD results were evaluated and all QC criteria were met.

Quantitation

Results quantitated between the instrument detection limit (IDL) and the RL ('B' flagged by the laboratory) were qualified as estimated ('J').

4.4 Organochlorine Pesticides by SW-846-8081A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.5 Organophosphorus Pesticides by SW-846-8141A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R.'

4.6 PCBs by SW 846-8082

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.7 Herbicides by SW-846-8151

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.8 Nitroaromatics and Nitramines by SW-846-8330

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results

rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report for the Site Investigation Performed at the "Landfill No. 2" (Parcel FA-79) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FA-79. The analytical data consisted of one sample delivery group (SDG), CK979001, which was analyzed by Quanterra Incorporated. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW-846-8270C
Target Analyte List Metals by SW-846-6010B/7470A/7471A
Organochlorine Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-8141A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151A
Nitroaromatics and Nitramines by SW-846-8330

2.0 Procedure

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the

analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e., SW-846, Code of Federal Regulations, SOP) and technical judgment, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R'qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The R qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions, is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organic Compounds by SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

- The following demonstrated relative response factors (RRFs) below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'). Positive results were estimated (qualified 'J'), unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK979001	DD0004, DD0005	Bromomethane	*R

* 'R' qualifiers take precedence over estimating qualifiers.

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK979001	DD0004, DD0005	Bromomethane, Chloroethane, Acetone	**R/UJ/*B

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK979001	DD0004, DD0005	Methylene chloride, Naphthalene, Acetone	Method/ER	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed for the project samples, and all QC criteria were met.

Laboratory Control Sample

Laboratory control sample (LCS) was performed for the project samples, and all QC criteria were met.

Internal Standards

All internal standards met QC criteria with the following exceptions. Compounds associated with the IS were qualified as applicable.

SDG Number	Sample Number	Internal Standard	Validation Qualifier
CK979001	DD0004, DD0005	1,4-Dichlorobenzene-d4	UJ/*B

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as "J," were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Semivolatile Organic Compounds by SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ'), unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK979001	DD0004	3,3'-Dichlorobenzidine, Butyl Benzyl Phthalate	UJ
CK979001	DD0005	2,4-Dinitrophenol, Hexachlorocyclopentadiene	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK979001	DD0004, DD0005	bis(2-Ethylhexyl)phthalate	Method	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and field duplicate results were evaluated. All QC criteria were met with the following exceptions for which RPD > 50 percent:

SDG Number	Sample Number	Compound	Validation Qualifier
CK979001	DD0004 (original) DD0005 (FD)	Indeno(1,2,3-CD)Pyrene, Fluoranthene, Benzo(K)Fluoranthene, Benzo(B)Fluoranthene	J

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as "J," were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846-6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample

All ICS percent recoveries were acceptable. All QC criteria were met.

Inductively Coupled Plasma Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples.

Field Duplicates

Original and FD results were evaluated. All QC criteria were met with the following exceptions for which RPD > 50 percent:

SDG Number	Sample Number	Compound	Validation Qualifier
CK979001	DD0004 (original) DD0005 (FD)	Silver, Zinc	J

Quantitation

Results quantitated between the instrument detection limit and the RL ('B' flagged by the laboratory) were qualified as estimated (J).

4.4 Organochlorine Pesticides by SW-846-8081A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.5 Organophosphorus Pesticides by SW-846-8141A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.6 Polychlorinated Biphenyls by SW-846-8082

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.7 Herbicides by SW-846-8151

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.8 Nitroaromatics and Nitramines by SW-846-8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report for the Site Investigation Performed at the "Landfill No. 3" (Parcel FA-80) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FA-80. The analytical data consisted of one sample delivery group (SDG), CK980001, which was analyzed by Quanterra Incorporated. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW-846-8270C
Target Analyte List Metals by SW-846-6010B/7470A/7471A
Organochlorine Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-8141A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151A
Nitroaromatics and Nitramines by SW-846-8330

2.0 Procedures

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP

guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i.e., SW-846, Code of Federal Regulations, SOP) and technical judgment, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) were due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions, is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organic Compounds by SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following demonstrated relative response factors (RRFs) below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK980001	DD0007, DD0008, DD0009, DD0010, DD0011	Bromomethane	R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK980001	DD0007, DD0008, DD0009	2-Butanone, 2-Hexanone, Methylene Chloride	UJ/B
CK980001	DD0010, DD0011	Chloroethane	UJ
CK980001	DD0007, DD0008, DD0009, DD0010, DD0011	Bromomethane, Acetone	R//B

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, takes precedence over estimating qualifiers assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK980001	DD0007, DD0008, DD0009, DD0010, DD0011	Methylene Chloride	Method/ER	B
CK980001	DD0007, DD0009, DD0010, DD0011	Acetone	ER	B
CK980001	DD0010	Naphthalene	Method	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

Laboratory Control Sample (LCS) was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were identified.

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Semivolatile Organic Compounds by SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK980001	DD0007, DD0008, DD0009, DD0010, DD0011	2,4-Dinitrophenol, Hexachlorocyclopentadiene	UJ
CK980001	DD0007, DD0008, DD0009	4,6-Dinitro-2-Methylphenol	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK980001	DD0008	bis(2-Ethylhexyl)phthalate	Method	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and FD results were evaluated and all QC criteria were met.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846-6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK980001	DD0008	Mercury	Method	B
CK980001	DD0010	Thallium	ER	B

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met with the exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
CK980001	DD0007, DD0008, DD0009, DD0010, DD0011	Mercury, Chromium, Lead, Zinc, Antimony, Manganese	B/J/UJ

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers assigned due to quantitation.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample

All interference check sample (ICS) % recoveries were acceptable. All QC criteria were met.

Inductively Coupled Plasma Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples with the exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
CK980001	DD0007, DD0008, DD0009, DD0010, DD0011	Potassium	J

Field Duplicates

Original and FD results were evaluated and all QC criteria were met.

Quantitation

Results quantitated between the instrument detection limit (IDL) and the RL ('B' flagged by the laboratory) were qualified as estimated ('J').

4.4 Organochlorine Pesticides by SW-846-8081A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Confirmation

The second column confirmation analysis %D > 25 percent was exceeded for the following:

SDG Number	Sample Number	Compound	Validation Qualifier
CK980001	DD0011	Heptachlor, Beta-BHC, Heptachlor Epoxide, Endosulfan II	J
CK980001	DD0009, DD0011	4,4'-DDE	J

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as

rejected 'R'. It should be noted that Chlordane (Technical) results for samples DD0008, DD0009, and DD0011, were estimated (qualified 'J'), due to altered pattern.

4.5 Organophosphorus Pesticides by SW-846-8141A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R.'

4.6 PCBs by SW-846-8082

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'. It should be noted that Aroclor 1242 results for samples DD0007, DD0008, and DD0010, were estimated (qualified 'J'), due to altered pattern.

4.7 Herbicides by SW-846-8151

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.8 Nitroaromatics and Nitramines by SW-846-8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report for the Site Investigation Performed at the Stump Dump Fill Area (Parcel FA-82) Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FA-82. The analytical data consisted of one sample delivery group (SDG), CK928001, which was analyzed by Quanterra Incorporated. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW-846-8270C
Target Analyte List Metals by SW-846-6010B/7470A/7471A
Organochlorine Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-8141A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151A
Nitroaromatics and Nitramines by SW-846-8330

2.0 Procedure

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation

process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e., SW-846, Code of Federal Regulations, SOP) and technical judgment, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation, and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions, is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organic Compounds by SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

- The following demonstrated RRFs below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK98200 1	DD0025, DD0026	Bromomethane	R

* 'R' qualifiers take precedence over estimating qualifiers.

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum relative response factor (RRF) criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK98200 1	DD0025, DD0026	Bromomethane, 2-Hexanone, 2-Butanone, Acetone, Methylene Chloride	B/J/UJ/R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, takes precedence over estimating qualifiers, assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK98200 1	DD0025, DD0026	Methylene chloride	Method/ER	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

Laboratory Control Sample (LCS) was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were identified.

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Semivolatile Organic Compounds by SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met. Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK982001	DD0025, DD0026	2,4-Dinitrophenol	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK982001	DD0025, DD0026	bis(2-Ethylhexyl)phthalate	Method	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Internal Standards

All internal standards met QC criteria.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846-6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample

All ICS percent recoveries were acceptable. All QC criteria were met.

Inductively Coupled Plasma Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples.

Field Duplicates

Original and FD results were evaluated and all QC criteria were met.

Quantitation

Results quantitated between the instrument detection limit (IDL) and the RL ('B' flagged by the laboratory) were qualified as estimated ('J').

4.4 Organochlorine Pesticides by SW-846-8081A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.5 Organophosphorus Pesticides by SW-846-8141A

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.6 PCBs by SW-846-8082

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.7 Herbicides by SW-846-8151

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.8 Nitroaromatics and Nitramines by SW-846-8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

ATTACHMENT A

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Data Validation Summary Report for the Site Investigation Performed at the Stump Dump (Parcel FTA-82) Fort McClellan, Calhoun County, Alabama

1.0 introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FTA-82. The analytical data consisted of nine sample delivery groups (SDG), PK68201, PK68202, PK68203, PK68204, PK68205, PK68206, PK68207, PK68208 and PK68209, which were analyzed by Quanterra Incorporated. In addition, an evaluation of the field split (FS) data, which was analyzed by the U.S. Army Corps of Engineers-South Atlantic Division laboratory is included in this report. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Target Compound List Volatile Organics by Gas Chromatography/Mass Spectometry SW-846-8260B
TCL Semivolatiles by GC SW-846-8270C
Metals by SW-846-6010B and 7471A/7470A
Pesticides by SW-846-8081A
Organophosphorous Pesticides by SW-846-8141A
Herbicides by SW-346-8151A
Wet Chemistry

2.0 Procedures

The sample data were validated following the logic identified in the 1994 EPA *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1994 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) and *Region III National Functional Guidelines for Organic Data Review* (June 1992) were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data

and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, Gas Chromatography (GC) and GC/Mass Spectrometry calibration areas and is due to the fact that the analytical methods are "performance-based", and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW-846, CFR, SOPs) and technical judgement following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.) and various chlorinated pesticide compounds, which exhibited poor calibration responses in the associated calibration data, herbicide results due to grossly missed hold-times, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

This validation report has been prepared for all the samples associated with this investigation and the overall results of the validation findings are summarized in this report. A listing of the validation qualifiers and the reason codes, along with their definitions is also found in Attachment A. These qualifiers and reason codes were applied to the data and stored in the FTMC database. The following section highlights the key findings of the data validations for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organics by GC/Mass Spectrometry SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exceptions of the following:

- The following demonstrated RRFs below 0.1 in the ICAL and/or CCAL: nondetect results were rejected (qualified 'R'); positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK68201	FX0001, FX0002, FX0003, FX0004, FX0009, FX0010, FX0011, FX0021, FX0022, FX0023, FX0024, FX0025	Bromomethane, Acetone, 2-Butanone	J/R/B*
PK68201	FX0003, FX0004, FX0009, FX0010, FX0011, FX0021, FX0022, FX0023, FX0024, FX0025	Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-chloropropane	R/J
PK68201	FX0009, FX0010, FX0011	2-Hexanone	R
PK68202	FX0012	Bromomethane, Acetone, 2-Butanone, 2-Hexanone, Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-chloropropane	R/J

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK68203	FX0005, FX0006, FX0008, FX0019, FX0020	Acetone, 2-Butanone, Bromochloromethane, Dibromomethane	R/J
PK68204	FX0013, FX0015, FX0016, FX0018	Acetone, 2-Butanone, Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-chloropropane	R/J
PK68205	FX0014	Acetone, 2-Butanone, Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-chloropropane	R/J
PK68206	FX3001, FX3002, FX3003, FX3005, FX3006, FX3007, FX3008, FX3009, FX3010	Acetone, 2-Butanone, 1,2-Dibromo-3-chloropropane	R/J
PK68206	FX3001, FX3002, FX3003, FX3005, FX3010	Bromomethane, Bromochloromethane, Dibromomethane	R/J
PK68207	FX2001, FX2002, FX2003, FX2004, FX2006	Acetone, 2-Butanone, Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-chloropropane	R/J
PK68208	FX1001, FX1002, FX1004, FX1005, FX1006, FX1007	Acetone, 2-Butanone, Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-chloropropane	*B/R/J
PK68209	FX0026	Acetone, 2-Butanone	R

* **'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.**

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results were estimated (qualified 'UJ'); unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met; positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK68201	FX0003, FX0004, FX0009, FX0010, FX0011, FX0021, FX0022, FX0023, FX0024, FX0025	Methylene chloride, Napthalene	J/UJ/B*
PK68201	FX0001, FX0002, FX0009, FX0010, FX0011	Bromomethane	J/UJ/R**
PK68201	FX0009, FX0010, FX0011	Chloromethane, 2-Hexanone, 1,2-Dibromo-3-chloropropane, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene	J/UJ
PK68202	FX0012	Methylene chloride, Napthalene, Chloromethane, Bromomethane, 2-Hexanone, 1,2-Dibromo-3-chloropropane, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene	J/UJ B*/R**
PK68204	FX0013, FX0015, FX0016, FX0018	Dichlorodifluoromethane, Bromomethane	J/UJ
PK68205	FX0014	Bichlorodifluoromethane, Bromomethane, Bromoform, 1,2,3-Trichlorobenzene	J/UJ
PK68206	FX3001, FX3002, FX3003, FX3005, FX3006, FX3007, FX3008, FX3009, FX3010	Methylene chloride	J/UJ/B*
PK68206	FX3001, FX3002, FX3003, FX3005, FX3010	Acetone, Bromomethane, Bromoform, 1,2-Dibromo-3-chloropropane	J/UJ
PK68206	FX3001, FX3002, FX3003, FX3005, FX3010	Dichlorodifluoromethane, Chloromethane, Trichlorofluoromethane, Hexachlorobutadiene, Napthalene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene	J/UJ
PK68206	FX3007	2-Butanone, Bromochloromethane, Bromomethane, Bromoform, 1,2-Dibromo-3-chloropropane, Dibromomethane	J/UJ

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK68207	FX2001, FX2002, FX2003, FX2004, FX2006	Methylene chloride	UJ
PK68208	FX1001, FX1002, FX1004, FX1005, FX1006, FX1008	Bromomethane, Methylene chloride	*B/UJ
PK68209	FX0026	Acetone,Methylene chloride, Dichlorodifluoromethane, Napthalene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene	**R/UJ

* **'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.**

** **'R' qualifiers take precedence over estimating qualifiers.**

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip blanks, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

Note: 'B' qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK68201	FX0001, FX0002, FX0004, FX0023	Acetone	MB/ER
PK68201	FX0001, FX0002, FX0003, FX0004, FX0009, FX0010, FX0011, FX0021, FX0022, FX0023, FX0024, FX0025	Methylene chloride	Method
PK68201	FX0003, FX0022	2-Butanone	ER
PK68201	FX0009, FX0010, FX0011	Trichloroethene	Method
PK68201	FX0009	Toluene	Method
PK68202	FX0012	Methylene chloride, Trichloroethene	Method